Your Beating Heart

Lesson 1 of 3

Grade Level: K-4
Subject: Life Science
Prep Time: <10 minutes
Activity Duration: 30 minutes
Material Category: General Classroom

National Education Standards:				
Science	**Mathematics**	**Technology**		**Geography**
		ISTE	**ISTA**	
2a, 7b				

Objective:

The students will dramatize the pathway blood cells follow when delivering oxygen to the body (red blood) and returning carbon dioxide (CO_2) to the lungs (blue blood). They will also illustrate and explain this same concept on poster paper or the activity sheet.

Materials:

- 50 sheets of red paper labeled "oxygen"
- 50 sheets of blue paper labeled "carbon dioxide"
- 30 willing and active participants

Related Links:

Your Beating Heart
http://encarta.msn.com/alexandria/templates/lessonFull.asp?page=1553

How Your Heart Works - Chambers and Valves
http://www.howstuffworks.com/heart2.htm

How Your Heart Works - Flow Of Blood
http://www.howstuffworks.com/heart3.htm

Gridpoints Article on Ventricular Assistance Device
http://www.nas.nasa.gov/About/Gridpoints/PDF/gridpoints_spring2000.pdf

Your Beating Heart

Student Sheets

Name: _____

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Procedure

1. Your blood travels through your body thanks to your heart. Your teacher will assign you a part so that you can see how blood travels and how it changes. Follow her instructions.

2. After you have travelled like blood does through the heart, use the space below to draw the path that your blood takes from the lungs to the heart, out to the body and back to the lungs. Make sure that you do this in color!

Your Beating Heart

Teacher Sheets

Pre-Lesson Instructions

This is a group activity with much movement and will require a big space.

The teacher will want to go through this several times, each time picking up the pace.

Background Information

The oxygen we breathe passes through the lung (via tiny air sacs) into capillaries. This oxygen-rich blood (red) then goes to the heart where it is redirected to the various parts of the body. T he vessels that transport this oxygen-rich blood are called arteries. These arteries branch out into progressively narrower vessels called capillaries. Digested food and oxygen pass through the capillaries into the cells. These same capillaries then take up carbon dioxide and other products from the cells. From here the (blue) blood travels through veins back to the heart where it is redirected back to the lungs to release the carbon dioxide and pick up more oxygen.

Please note that this activity is only set up to show the path of oxygen and carbon dioxide. It does NOT take into account all the other products carried by the blood. You could easily adapt this activity to account for those parts, however.

Guidelines

1. Read article "I Have The Heart Of A Rocket".

NOTE: This lesson must be done in a large open space.

2. Assign one student to be the left side of the heart (**Heart 1**) and one student to be the right (**Heart 2**). Place them in the middle of the room/space.

3. Assign two students to collect and distribute cards in the lung. Place them in one corner of the space. One will collect blue (**Lung 1**) and one will pass out red (**Lung 2**).
4. Assign two students to be a body part (e.g., the big toe or any other body part you would like to assign). One will collect the red cards (**Toe 1**) and one will distribute the blue (**Toe 2**). Place them diagonally opposite the lung.

5. All remaining students will be blood cells. They will line up at the lung to receive oxygen (red cards).

6. As the heart students begin to chant *pump, pump, pump...* or *beat, beat beat...*, the students in line begin to file past **Lung 2** (holding the oxygen red cards) and take a card.

7. After receiving their oxygen, they head for the heart where **Heart 1** pumps them off out to the big toe. (**Heart 1** just redirects the blood.) Have them clap hands to illustrate the pumping sound.

8. At the big toe, they pass off their oxygen to **Toe 1,** pick up their CO_2 from **Toe 2,** and head back to the heart.

9. This time they file past **Heart 2,** clapping hands again as they are redirected back to the lung.

10. At the lung, they hand off their CO_2 (blue card) and pick up more oxygen (red card), and the process begins again. This process should take about 15 seconds in order to illustrate the actual time needed for this process in your body.

11. At this point, the students can use the bottom of the student sheet to illustrate the path that blood takes from the lungs to the heart, out to the body and back to the lungs. Make sure they do this in living color! If you want to have bigger pictures for display, you can hand out poster paper or a sheet with a heart diagram and have the students draw their illustrations on this.

Note: This simulation does not show the four chambers of the heart, but you could modify the simulation to add that.

12. Share and discuss their illustrations.

13. After completion and clean-up, discuss the activity.

Extensions

1. The heart can speed up if the body is more active or slow down when at rest. It is easy to simulate this.

2. Music/Rhythm: This activity can easily be enriched with song. The students LOVE to put this process to the tune of a song and this reinforces the process. "Your Cheating Heart" easily becomes "Your Beating Heart."

3. Try adding the digestive system into this. Several students can be placed throughout the space to represent several other organs (liver, kidneys, stomach, etc.). This works

great as a challenge. Have the students figure out where these organs should go and how the blood circulates through the system.